REMARKS

By the present amendment, claims 1, 6-7, and 11-14 have been amended to improve the claim language by deleting terms or expressions that are objected to or making other wording changes, as set forth in details below. Also, claim 15 has been canceled.

It is submitted that the amendment does not raise any new issues. Accordingly, entry and consideration of the amendment is respectfully requested.

Claims 1-14 and 16 are pending in the present application. The claims are directed to a method of sequence determination for nucleic acid. Claim 1 is the only independent claim.

As a preliminary, it is noted that, in this Office Action, an English translation of the priority application is no longer required, but the claim for priority is not acknowledged in the Office Action Summary.

Thus, acknowledgement of the claim for priority is respectfully requested.

Further, in the Office Action, claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, for lack of written description. Specifically, the following terms or phrases are objected to: "**actual nucleic acid sample**" in claim 1, line 2, "based on the signal strengths for each of the remaining peaks **according to predetermined group membership criteria**" in claim 1, lines 11-13, "calculating signal strength ratios for each of the classified four groups **according to a predetermined calculation method**" in claim 1, line 15, "based on the signal strength ratios for each of the four groups **according to predetermined base allocation criteria**" in claim 1, lines 16-17, "the **largest** peak numbers" in claim 5, "**median** values" in claims 6 and 7, "the **optimized** matrix" in claim 10, "a set of conditions are **predetermined**" in claim 11, "the set of **predetermined** conditions include..." in claims 12 and 13, "**four detection parts with one**

detection part for each fluorochrome" and "**four fluorochrome**" in claims 14 and 15, and "peaks having **abnormal signal strengths** are eliminated" in claim 16.

Reconsideration and withdrawal of the rejection is respectfully requested. The objections to the terms and phrases listed above have been addressed as follows.

Claim 1, line 2, "**actual nucleic acid sample**": support is found or immediately derived generally on page 1, lines 9-13 ("DNA fragments specimens... are electrophoresed"), and specifically on page 3, page 4, line 22 ("obtaining a matrix value from actual sample migration") and line 28 ("determining the base sequence of nucleic acid on the basis thereof"). It is submitted that it would not make sense to consider a method of determining a base sequence of nucleic acid using a sample that does not contain nucleic acid.

Further, the expression has been amended to "actual sample of nucleic acid" to correspond more closely to the text of the above passages in the description.

Claim 1, lines 11-13, "based on the signal strengths for each of the remaining peaks **according to predetermined group membership criteria**": support is found in particular on page 6, line 16 ("classify peaks in response to signal strengths"). The signal for each peak comprises a waveform for each detection part, as illustrated on Fig. 2 and as explained in the general explanation on page 2. Inherently, the peaks after an elimination step are "remaining peaks". Inherently also, a classification is made according to classification criteria, as explained in particular on page 6, lines 22-24 ("In this case... selected on the premise...).

Further, the expression has been amended to recite "in response to the signal strengths for each of the remaining peaks", to correspond more closely to the text of page 6, line 16 and reduce the number of issues.

Claim 1, line 15, "calculating signal strength ratios for each of the classified four groups **according to a predetermined calculation method**": support is found in particular on page 7, first paragraph ("Various calculation methods such as mean values or central values can be utilized").

Further, the expression has been amended to recite "calculating signal strength ratios for each of the classified four groups", so as to reduce the number of issues.

Claim 1, lines 16-17, "based on the signal strength ratios for each of the four groups **according to predetermined base allocation criteria**": support is immediately derived from an understanding of the allocation step according to the nature of the method itself. However, the expression has been amended to recite "based on the signal strength ratios for each of the four groups", so as to reduce the number of issues.

Claim 5, "the **largest** peak numbers": support is found in particular on page 6, lines 22-24 ("classification of upper four groups having larger peak numbers is selected on the premise that such abnormal peaks have a small appearance frequency").

Claims 6 and 7, "**median** values": the term has been amended to recite the original term "central values". It is submitted that "central value" is a term of the art which characterizes the central physical location of values in an array of values. Accordingly, the term "central values" is clear to a person of the art.

Claim 10, "**optimized** matrix": support is found in particular on page 7, lines 27-28 ("obtain a further optimum matrix value from the result of base calling").

Claim 11, "a set of conditions are **predetermined**": support is found in particular on page 8, lines 24-26. The specification uses the term "limited" which is clearly a pre-determination, in

the context of simplifying the treatment. However, the expression has been amended to recite "a set of conditions is limited", so as to correspond more closely to the text on page 8, lines 24-26.

Claims 12 and 13, "the set of **predetermined** conditions include": support is found in particular from page 8, lines 27 to page 9, line 16. However, the expression has been amended to recite "the set of limited conditions include...", so as to correspond more closely to the text in the specification, as discussed above.

Claims 14 and 15, "**four detection parts with one detection part for each fluorochrome**" and "**four fluorochrome**": support is found in particular in the illustration of a matrix on pages 2-3, in particular page 3, lines 6-7 (four types of fluorochromes") and 14-15 ("four types of detection parts detecting four types of wavelengths"). It is submitted that a person of the art would understand immediately that the wavelengths are those corresponding to the four fluorochromes. However, claim 15 has been canceled and claim 14 has been amended to recite "four types of detection parts detecting four types of wavelengths of four types of fluorochromes, respectively", to correspond more closely to the text in the specification.

Claim 16, "peaks having **abnormal signal strengths** are eliminated": support is found in particular on page 6, lines 16-28, in particular line 16 ("classify peaks in response to signal strengths") and 23-24 ("premise that such abnormal peaks have a small appearance frequency"). Inherently, since the peaks are classified according to signal strengths, "such" abnormal peaks have those having abnormal signal strengths.

In view of the above, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as indefinite. It is alleged in the Office Action that the expression "the matrix

transformation from the actual sample migration" in claim 1 is indefinite because it is unclear whether "an actual nucleic acid sample" or "a generic actual sample, generically defined".

Reconsideration and withdrawal of the rejection is respectfully requested. The expression has been amended to recite "the matrix transformation from migration of the actual sample". Since the actual sample of nucleic acid has been introduced earlier in the claim, the proposed recitation clearly has antecedent basis and is definite.

In view of the above, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-16 remain rejected under 35 U.S.C. 103(a) as obvious over US 4,833,332 to Robertson et al. (Robertson) in view of US 5,834,972 to Shiemenz, Jr. et al. (Shiemenz) and US 5,098,536 to Anderson (Anderson).

In answer to the argument made in the response to the previous Office Action that Schiemenz discloses a matrix for signal amplification, not signal correction, it is alleged in this Office Action that a combination of Schiemenz with Robertson would result in obtaining a matrix value for obtaining emission strength from detected signal strength, and that the present claims do not recite "signal correction".

The rejection is again respectfully traversed. Applicants urge that Schiemenz uses a matrix with constant coefficients, as specifically taught by Schiemenz at col. 4, line 39 ("each element of the matrix is a complex constant"). Thus, Schiemenz is completely silent as to calculating matrix coefficients based on signals obtained from migration of the actual sample as recited in the present claims.

Further, as explained in the response to the previous Office Action, Robertson uses a predetermined algorithm that is not modified upon actual sample migration (see Robertson at col.

15, lines 48-61, and the definition of the function W at col. 14, lines 35-38). As a result, there would have been no motivation to combine Robertson with Schiemenz, and in addition, any combination of Robertson and Schiemenz would not have resulted in obtaining matrix value by signal strength ratios of the respective base groups from actual sample migration.

In contrast, in the presently claimed invention, the matrix value is obtained from actual sample migration, in that, in particular, signal strength ratios are calculated for each of the classified four groups of the peaks extracted from the waveform signals, the corresponding bases are allocated to the classified four groups based on the signal strength ratios for each of the four groups, and the matrix value is obtained by signal strength ratios of the respective base groups, as recited in present claim 1. This feature of the presently claimed invention, and the advantages of the claimed method, i.e., avoiding a predetermined matrix and/or pre-calibration measures, which as described in particular on page 5, lines 10-13, are not taught or suggested in any of the cited references. Therefore, the present claims are not obvious over the cited combination of references.

In view of the above, it is submitted that the rejection should be withdrawn.

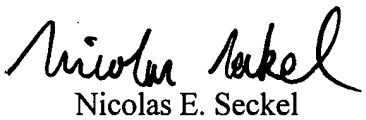
In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



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